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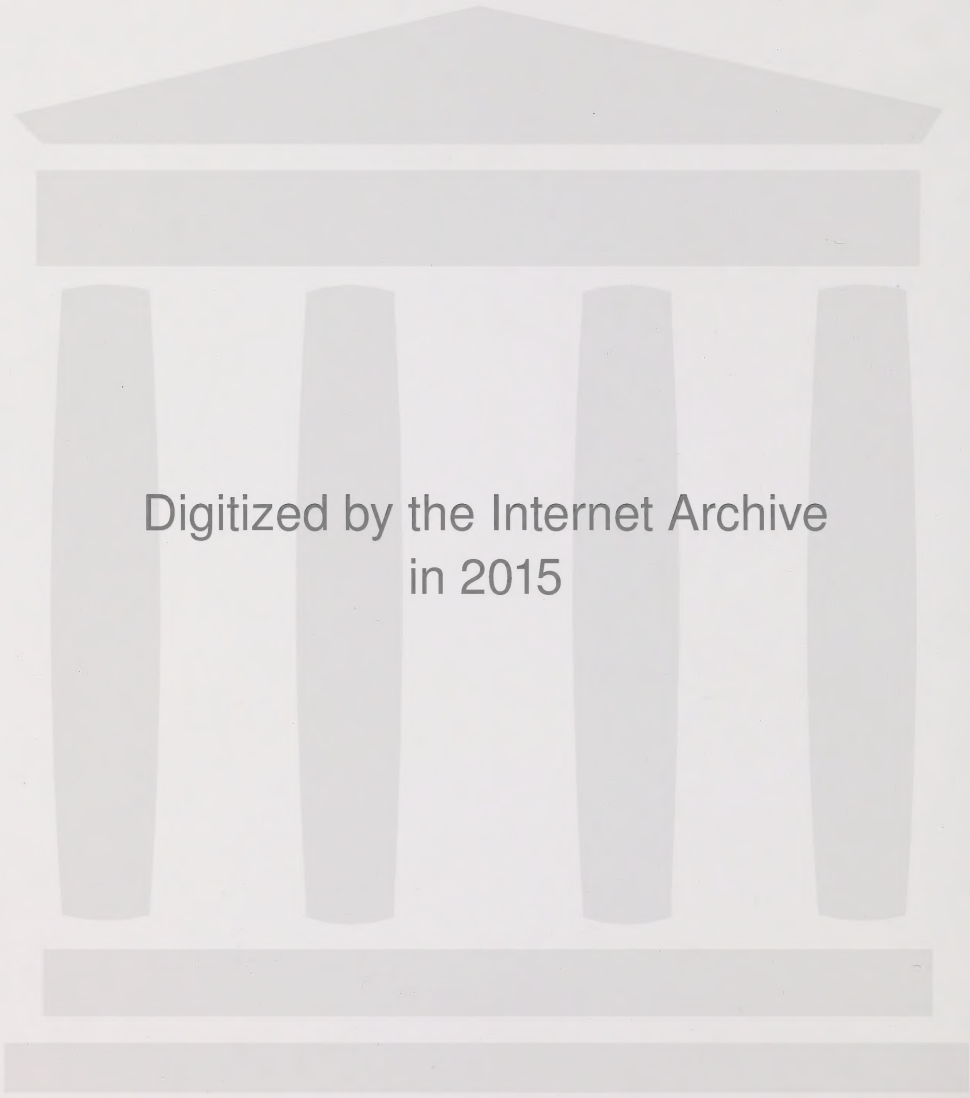
# moving to competition

## A guide to Alberta's new electric industry structure

Alberta
ENERGY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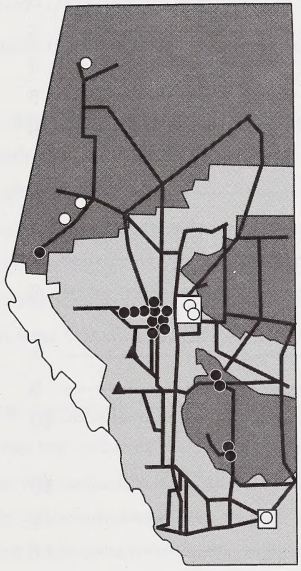
# Alberta Interconnected System



- **Investor-owned and municipal utilities**
- **Coal-based system**

| 1994 Capacity | ● Coal | ○ Gas | ▲ Hydro | Total |
|---|---|---|---|---|
| ***Utility Generation*** | | | | |
| Alberta Power | 1250 | 125 | 1 | 1376 |
| Edmonton Power | 770 | 870 | — | 1640 |
| Medicine Hat | — | 182 | — | 182 |
| TransAlta Utilities | 3685 | — | 795 | 4480 |
| | **5705** | **1177** | **796** | **7678** |
| ***Non-Utility Generation*** | | | | |
| Industrial | — | — | — | 804 |
| Small Power | — | — | — | 69 |
| | | | | **873** |
| ***Interconnections*** | | | | |
| British Columbia | — | — | — | 400 |
| Saskatchewan | — | — | — | 125 |
| | | | | **525** |

—— Major transmission lines

*Note: This guide is intended as a general, non-technical reference to Alberta's new industry structure. It is not an official interpretation of the Electric Utilities Act and associated regulations.*

# Moving to competition

## *A guide to Alberta's new electric industry structure*

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# 1. Introduction

This guide outlines the main components of the new structure of Alberta's electric industry. The framework for this structure is the Electric Utilities Act, which came into effect on January 1, 1996. The legislation introduces competition into the electric utility business and puts Alberta at the forefront of similar changes worldwide.

In the fall of 1993, the Minister of Energy, the Honourable Pat Black, directed the Department of Energy to work with stakeholders to develop the new structure. The Minister established two broad goals:

- Establish a mechanism that is fair from a province-wide perspective.
- Introduce industry structure and regulatory reforms that preserve and enhance the Alberta Advantage of competitive electricity prices.

The Act is the result of consultation with players in all areas of the electric industry.[1] It reflects a broad consensus among utilities, customers, independent power producers and regulators on how best to meet the Government's objectives.

January 1, 1996 represents a turning point in the evolution of Alberta's electric industry. Over the coming months and years, Alberta will make the transition to a fully competitive market for power, and to more streamlined regulation in parts of the business where customers are best protected by regulating costs.

The new structure will maintain the strengths of the old. These include a low average cost for generating power, and electricity prices that are competitive anywhere in the world.

## 1.1 Background

### *Why change?*

Industries and governments throughout the world are looking for new ways to remain competitive. In Australia, New Zealand and the United Kingdom, the change involves breaking up government-owned monopolies. In the United States, excessively high electricity rates in some areas and large rate differences among utilities are driving the introduction of competitive forces, particularly in the generation sector.

The changes taking place in the electric industry are shaped by two factors: the technical requirements of electric systems in general, and the specific circumstances and needs of the individual jurisdiction. Alberta's electric consumers are served by a mix of privately owned and municipally owned utilities. The industry and regulatory structure in this province evolved over time in the same way as in many other parts of the world. Two key characteristics of the historical structure are *vertical integration* and *regulated monopoly*:

1. Vertical integration[2] — Alberta's largest utilities are involved in all components of providing electric service: generation (production of power), transmission (bulk delivery) and distribution (which includes local delivery, and making the pricing arrangements to acquire power for delivery to the end user).
2. Regulated monopoly — each utility was given both a right and an obligation to serve a particular geographical area. Generating units had to be large in order to achieve economies of scale; small units owned by competing companies would have been inefficient. To protect consumers in the absence of competition, costs and rates have been reviewed and approved by either a provincial regulator or municipal authorities.

In the new industry structure, the generation component is being deregulated. This is made possible by two factors: first, vertical integration no longer serves the same purpose as it once did and second, small-scale generation technologies have become cost-effective.

When communities were small and isolated, vertical integration of the electric utility served to increase the reliability of supply. Close coordination of generation, transmission and distribution was most easily accomplished by a single entity. Today, the electric system in Alberta is part of a grid encompassing Alberta, B.C., and the western United States. Technology and systems have evolved to allow the coordination of generation across the entire grid with the transmis-

[1] See Appendix B for a list of the organizations involved in the restructuring.

[2] In Alberta, both of the privately owned utilities (Alberta Power and TransAlta Utilities) and two of the city-owned utilities (Edmonton Power and The City of Medicine Hat) are vertically integrated. The remaining municipally owned utilities are mainly involved in distribution.

sion and distribution systems of each individual area. Although many utilities remain vertically integrated, such integration is no longer necessary to ensure reliability or the safety of the system.

Coupled with the technology improvements in small-scale generation, there is no reason to maintain the old structure of regulated monopolies in the generation sector. Independent power producers can effectively compete with existing generating units. As well, some consumers have both the ability and the desire to make their own pricing arrangements for new supply. Continued regulation of a market that can be competitive creates unnecessary regulatory costs and stifles innovation.

The transmission and distribution systems are still natural monopolies, since it would be inefficient to build more than one set of wires. The rates and operation of these systems will be regulated by the Alberta Energy and Utilities Board (EUB).

## 1.2 Overview of the Electric Utilities Act

The Electric Utilities Act establishes the broad framework for the electric industry in the future. This framework is fleshed out by regulations. Like the Act itself, regulations have been developed in consultation with stakeholders, through an advisory committee representing utilities, consumer groups, independent generators and environmental groups.

Much of the success of Alberta's new industry structure depends on creating a competitive environment where many suppliers are encouraged to pursue generating projects. This requires a level playing field, in which potential competitors see they have a fair chance at being able to negotiate contracts to supply power.

Key purposes of the Act are:

- To establish an efficient market for generation based on fair and open competition.
- To ensure that the benefits and costs associated with existing, regulated plants continue to be shared equitably by current and future customers throughout the province.
- To ensure that investment in new generation is guided by competitive market forces.
- Where regulation is still necessary, to minimize its cost and provide incentives for efficiency.

### *The new structure*

The new structure does not affect the physical nature of electricity delivery, nor does it require the integrated utilities to divest themselves of assets. However, the functions of generation, transmission and distribution will be treated separately for accounting, regulatory and functional purposes.

Figure 1 outlines the main elements of the new structure. They include:

- **Open competition for generation** — The new structure increases the number of players in the generation sector. Under the old arrangements, independent generators had to negotiate with the existing utility generators to sell power. Independent power producers and importers will now compete on an equal basis with existing utility generation, in both the current market to supply power and in the market to supply new generating capacity.
- **Open access power pool** — A new provincial power pool is the market for all electricity bought and sold in the province. The pool is operated as a cooperative venture and is overseen by a council made up of representatives from all Alberta participants in the pool.

  All generators in Alberta and importers sell energy through the pool to distributors and exporters. The pool establishes an hourly market price for exchanges of power.
- **System access to the pool** — All generators and importers are able to supply power on a non-discriminatory basis to the pool, regardless of who owns any given portion of the power lines.[3]

  The grid that delivers electricity throughout Alberta is coordinated by a Transmission Administrator, who contracts with the owners of facilities to provide transmission services. The Transmission Administrator also ensures that necessary levels of system support services are in place. The Grid Company of Alberta Inc. ("GridCo") has been appointed to fill this role in 1996.

[3] Selling power to the pool is more than just access to transmission wires. It means being integrated into the operation of the entire system from moment to moment. Bringing a generating unit on-line may change transmission constraints, and require adjustments to dispatch instructions and the desired level of operating reserve. Buyers and sellers dealing in the pool thus pay a *system access* charge that covers the cost of losses and system support services as well as transmission wires.

Tariffs to recover system access costs from distributors and generators are established by the Transmission Administrator, subject to regulatory approval.

- **Regulated distribution** — Utilities will continue to have the basic right and obligation to meet the power supply requirements for all customers in their service areas. Service area boundaries are unchanged.

  To serve their customers, distribution companies will purchase energy through the pool and obtain transmission services from the Transmission Administrator. Distributors pay "postage-stamp" rates for transmission; that is, all distributors pay the same price for transmission, regardless of how far they are from sources of generation.

- **Import and export** — The new structure removes restrictions on who may import or export power in Alberta. Importers and exporters must become members of the Pool. They must also demonstrate that they have appropriate contractual arrangements with the Transmission Administrator and any external transmission systems involved in their transaction.

  Both importers and exporters will pay location-based tariffs for system access.

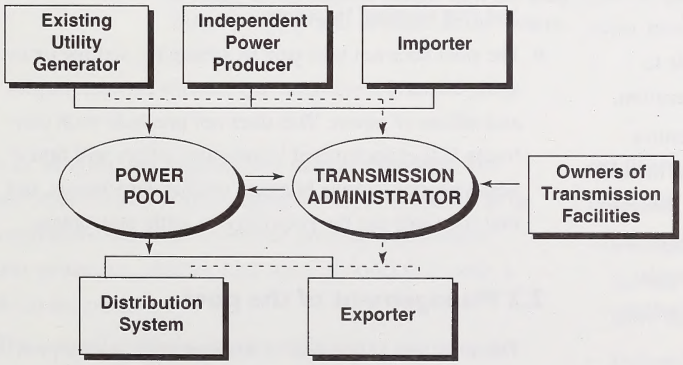



**Figure 1. Main elements of Alberta's electric industry**

## 1.3 Achieving the goals

The proposed structure fulfills both broad goals established by the Minister for industry structure.

- *Establish a mechanism that is fair from a province-wide perspective.* This goal is achieved through the following measures:

  a) Through the Transmission Administrator, distributors will be charged the same system access rates, regardless of where their customers are located.

  b) The Act created a set of financial hedges of the pool price between distributors and the owners of existing units.[4] The effect of these hedges is that all consumers — old and new, no matter where they are located — will continue to share in the low cost of existing generation.

- *Introduce industry structure and regulatory reforms that preserve and enhance the Alberta Advantage of competitive electricity prices.* Measures in the Act that will help achieve this goal include:

  a) Introducing competition for future generation and open access to the power pool. As the balance between demand and supply tightens, the pool price of electricity will increase, providing a signal for the development of new generation. Distributors and developers of new generation may enter into financial arrangements to hedge the volatility of the pool price.

  b) Enabling the Alberta Energy and Utilities Board (EUB) to adopt incentive regulation. Incentive regulation aims at reducing costs by giving utilities stronger incentives to pursue efficiencies.

  c) Studying customers' pricing options for generation. A number of customers have expressed a desire to make their own pricing arrangements for the generation-related portion of their bill. The Advisory Committee is studying the merits of allowing customers of distribution utilities to make their own pricing arrangements.

[4] The phrases "existing units" and "existing generation" refer specifically to the generating units currently owned by the regulated utilities in Alberta (Alberta Power, Edmonton Power and TransAlta Utilities).

The study is under way and will be completed as soon as practical.

## 1.4 Impact of the Electric Utilities Act on customer rates

### *Immediate Impact*

Implementing the Electric Utilities Act has almost no immediate impact on customer rates, since the costs of transmission and existing generation continue to be shared among all customers in the province. A great deal of work went into the regulation on how the costs of existing units are shared, to make sure that each distribution utility's costs are not significantly different in the near-term than they would have been under the former system.

### *Future Impact*

The effect of new pricing arrangements made by distribution utilities on behalf of their customers will not be averaged across the province, as has been the case in the past. Since new generation is expected to be more expensive than existing generation, this means that rate differences could appear if distributors' loads grow at different rates.

However, future differences in rates are forecast to be minimal. This is because load growth rates are not expected to differ significantly and system access rates will be the same for all distributors.

Depending on the outcome of the study of customer price choice, it is also possible that consumers will be able to make their own pricing arrangements for new generation.

In the long term, increased competition and incentive regulation are expected to result in lower costs than the old structure would have provided. This will maintain Alberta's competitive electricity rates, which are among the lowest in North America. In turn, lower rates help the province's industries to remain competitive in international markets — and maintain economic growth and opportunities.

# 2. The Power Pool

The power pool is an open-access, competitive market for electric energy. The Electric Utilities Act stipulates that all electricity traded in the province will be bought and sold through the pool. This section outlines major concepts related to the management and operations of the new pool.

The market design for the power pool is still in transition. The market established for 1996 will be modified and improved over the course of the next few years.

## 2.1 Key concepts

Key concepts underlying the pool include:

1. Anyone wishing to participate in the pool must become a member of the pool. Contact the Power Pool Administrator (see Section 8.0) for details on membership requirements.
2. The pool accepts offers from *all* generators and importers belonging to the pool for energy. This includes existing generators as well as plants that are built in the future.
3. The pool also accepts bids for energy from distributors for price-sensitive load; i.e., load that would prefer to be curtailed rather than pay more than a given price for power.
4. The pool acts as an hourly spot market for energy. A single price is declared for each hour based on a weighted average of the prices of the most expensive units dispatched (or demand bids curtailed) to meet load in that hour. (Figure 2 explains the basic concept underlying how the pool price is set.)
5. All energy is traded at the declared pool price for the hour. There is no spread between the price paid by buyers and that received by sellers.
6. The pool does not take part in arranging, settling or managing bilateral contractual agreements between buyers and sellers of power. This does not preclude such contracts. It is expected that buyers and sellers will find it advantageous to have bilateral pricing agreements, and that they will use the pool price to settle imbalances.

## 2.2 Management of the pool

Three entities play a role in managing the power pool: the Power Pool Council, the Power Pool Administrator and the system controller.

### *Power Pool Council*

The council is responsible for making sure the pool oper-

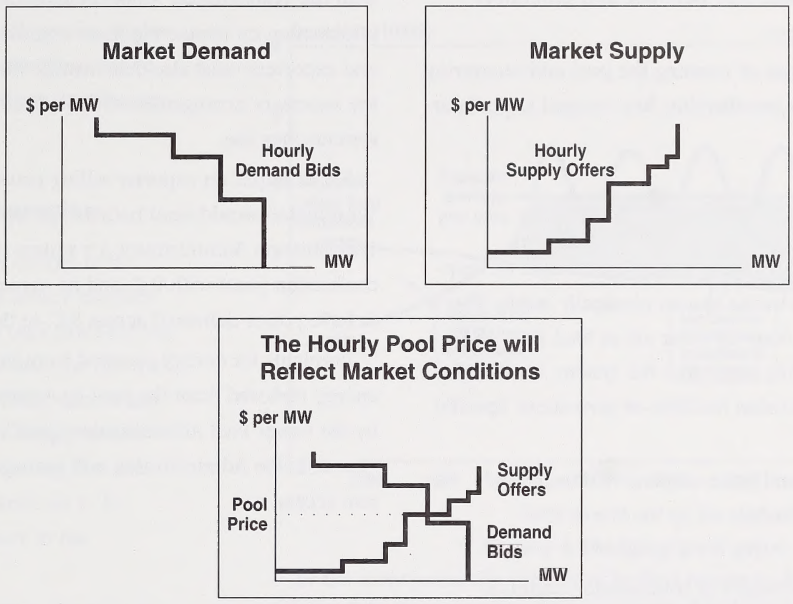



**Figure 2. How pool price is set**

*Figure 2 helps illustrate how the pool price is determined from hour to hour, depending on the bids and offers made to the pool. Distributors and exporters place hourly bids to indicate how much power they are willing to buy at different prices. Bids are ranked according to willingness to pay from highest to lowest. Generating units and importers offer blocks of power into the pool at the prices they are willing to accept. Offers are ranked by price from lowest to highest.*

*The bids and offers form the basis for a forecast of what load will be served and which units will be dispatched in the hour. The actual pool price is a weighted average of the highest priced unit (or load block) dispatched during the hour to balance supply and demand in the system.*

ates as an open, fair and efficient market for power. The Power Pool Council is an independent corporation made up of representatives from consumer groups, independent power producers, utilities, and other organizations with a stake in the pool.

The council is responsible for establishing the rules by which the pool operates, and for appointing the Pool Administrator and system controller.

### *Power Pool Administrator*

The Power Pool Administrator is responsible for carrying out the financial transactions and general operations of the pool. This includes:

- Managing the bid-offer process, in which participants submit their prices for supplying to and receiving power from the pool.
- Determining the "merit order" — the ranking of units according to the price they offer into the pool — and working out the overall schedule for which units should run when.
- Scheduling units to provide system services, such as operating reserve.

- Carrying out all the financial settlements, so that distributors pay for the power they purchase and generators receive their payment.
- Determining the costs of running the pool and recovering these costs through membership fees charged to pool participants.

### *System Controller*

The system controller is responsible for the task of keeping a large, dynamic electric system physically stable. This is a minute-by-minute, hour-by-hour job as load rises and falls, as generating units come onto the system, as emergencies arise with transmission facilities or generators. Specific tasks include:

- Dispatching units and price-responsive demand bids according to the schedule set by the Power Pool Administrator.
- Coordinating with owners of transmission facilities.
- Communicating system services requirements to the Power Pool Administrator and making sure the system has adequate levels in place at all times.

TransAlta Utilities has been appointed system controller for 1996, and provides this function from the Power Pool office in Calgary.

## 2.3 Importing and exporting power

All power imported into and exported from Alberta is also traded through the power pool. Importers submit offers to sell to the pool, are placed in the merit order with other suppliers of energy and receive the pool price for energy sold to the pool. Exporters submit bids to buy from the pool and pay the hourly pool price for energy taken. The Power Pool Administrator must ensure that scheduled flows across the transmission lines linking Alberta to other systems are feasible.

Anyone wishing to import to or export from the Alberta pool must become a pool participant. This involves signing agreements with both the Power Pool Council and with the Transmission Administrator. (See Section 8.0 for information on contacting these organizations.) Importers and exporters must also demonstrate that they have in place the necessary arrangements with any external transmission systems they use.

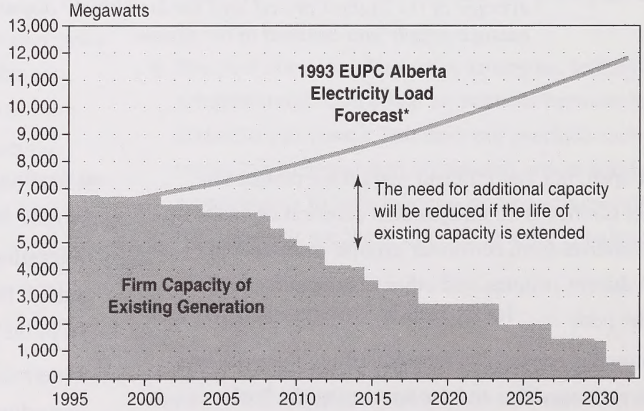
For example, an exporter selling power to the state of Washington would need both an agreement with Alberta's Transmission Administrator for system access at the interconnection point with B.C. and an agreement with BC Hydro to have power delivered across B.C. to the U.S. border.

Payments for energy received from importers and bills for energy removed from the pool by exporters will be handled by the Power Pool Administrator. GridCo, in its role as the Transmission Administrator, will manage the billing for system access.

# 3. Generation

All generators must sell their energy through the power pool.

In the early years of the new structure, most of the energy sold through the pool will come from Alberta's existing




* Assumes an average load growth rate of 1.8% per year (EUPC Mid Forecast). Excludes the City of Medicine Hat.

**Figure 3. Scheduled retirement of existing generation**

generating units, which continue to be owned by the utilities. However, as electric load grows and existing units are retired, future generation will be built through competition among suppliers.

## 3.1 Existing generation

Existing units offer energy to the pool in the same way as any supplier does, and receive the pool price for the energy they sell. However, the Electric Utilities Act treats existing generation differently from other supply in one important way: by ensuring that the costs of these units continue to be shared by all customers in the province.

This was an important objective in shaping the new structure since Alberta, unlike many other jurisdictions, has a low average cost for existing generation. The new structure ensures that Albertans continue to share this advantage, regardless of where they are located in the province.

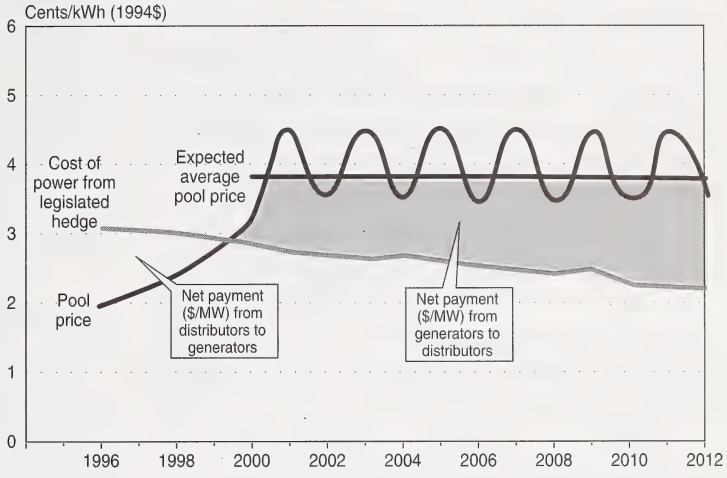



**Figure 4. Hedging pool price**

*In the early years, the net cost of hedged power to distributors will be greater than the pool price. This is because distributors are paying the embedded fixed and variable costs of the existing utility generation. As new, more expensive units are required to meet load (due to load growth and/or the retirement of existing units), this situation will change. The expected value of the pool price will be greater than the net cost of hedged power from existing units, and net payments will flow from the owners of existing generation to the distributors.*

*As time goes on, distributors (or their customers) are expected to supplement the legislated hedges with a "portfolio" of pricing arrangements with new suppliers.*

The mechanism for achieving this objective is a set of legislated financial "hedges" between distributors and owners of existing generating units. The specifics of the hedges are determined through a combination of regulations and EUB decisions.[5] Essentially, they ensure that the price distributors pay for power from existing units is close to the variable cost of generating that power. In return, distributors are required by the EUB to contribute fixed monthly payments to cover the fixed costs of existing generation. (See Figure 4.)

This mechanism ensures that:

- Distributors (and therefore their customers) are hedged against pool prices which are greater than the cost of power from existing sources for their current load requirements.
- Utilities are not faced with the risk of stranded investment for generating facilities they have built.

The legislated financial hedges are shared equitably among distributors on the basis of their shares of total provincial load.

### *Removing existing units from regulation*

The Electric Utilities Act allows existing units to be removed from regulation, provided that:

[5] See Appendix A for a detailed explanation of how the legislated financial hedges are set up.

- Entitled distributors agree to do so.
- The EUB approves the agreement as being in the interests of all consumers in the province.

In essence, this means that the legislated price hedges can be removed if all parties agree and the EUB approves. Distributors may want to replace the legislated hedge with a different commercial agreement. Alternatively, they may choose to make unhedged purchases at the pool price.

If a negotiated arrangement replaces the legislated hedge for a unit, all distributors (and their customers) would continue to share equitably in its costs. This is critical, since one of the main goals of restructuring was to find a replacement for the current system of cost averaging that is fair from a province-wide perspective.

## 3.2 New Generation

Any generator can build new generating capacity in the province. Distributors (or consumers) will make financial arrangements with project proponents so that new capacity can be financed and built to sell energy to the pool. These contracts will likely be similar to the financial hedges legislated for existing units.

Two kinds of companies will compete to build generation in the future:

- Independent power producers, such as industrial customers with their own generation, cogenerators (who simultaneously produce power and heat for some other purpose) and owners of renewable energy sources. Currently, about 10 per cent of the generating capacity in Alberta is owned by independent power producers. An increasing number of independent power producers have begun to compete worldwide in generation markets.
- The generating arm of existing utilities. Any contract between a generator and its affiliated distribution company will be reviewed by the Alberta Energy and Utilities Board. The regulator is responsible for making sure any such contract is negotiated fairly and independently, and is in the best interests of customers.

### *Building new capacity to meet need*

In Alberta's new industry structure, there is no longer a requirement for the regulator to approve new generating units on the basis of province-wide need for capacity. Instead, market forces will come into play as distributors forecast the pool price and make appropriate financial arrangements with new generators in order to hedge the hourly pool price. Alternatively, a generator may build a new unit on the basis of forecast revenue at the pool price.

### *Municipally owned generation in the future*

Much of the success of Alberta's new industry structure depends on creating a competitive environment in which many suppliers are encouraged to pursue generating projects. This requires a level playing field, in which potential competitors see they have a fair chance at being able to negotiate contracts to supply power.

In framing the new industry structure, the government recognized that municipally owned generation companies may have certain advantages, including exemption from income tax. Therefore, the Electric Utilities Act stipulates that municipalities can build new generation only under certain conditions.[6] The primary condition is that an independent assessment demonstrates that the project is not benefiting from any tax advantage, subsidy or financing advantage as a result of its association with the municipality.

# 4. Transmission

The province-wide transmission system will be managed — and regulated — as a single entity, although transmission facilities will continue to be owned by the respective utilities.

This recognizes that transmission must be operated as an integrated system to maintain reliability and cost efficiencies.

## 4.1 Management of the grid system

Two bodies play key roles in managing the transmission system: the Transmission Administrator and the Electric Transmission Council.

[6] The City of Medicine Hat is permitted under the Act to build new generation needed to serve its own customers.

### *Transmission Administrator*

The Transmission Administrator is responsible under the Act for the overall coordination of the transmission system. This includes such functions as:

- Contracting with individual transmission owners to provide services.
- Acting as the financial clearing house between the buyers of transmission services (generators, distributors, importers and exporters) and the transmission owners.
- Setting province-wide tariffs for system access.
- Interacting with the power pool on issues such as the generation required for operating reserve.

The role of the Transmission Administrator will be filled — at least until the end of 1996 — by the Grid Company of Alberta Inc. GridCo was established through a shareholders' agreement among the four utilities in the province that own transmission facilities.[7]

Distributors purchase system access, and pay for it according to the province-wide tariff established by the Transmission Administrator. In this way, all consumers pay a common, postage-stamp cost for transmission no matter where they are located in the province.

Rates for existing generators reflect their contribution to the cost of system services, as well as costs that are common to all suppliers of power into the pool. Contribution to power system services could be either a credit or a charge. Rates for new generators to connect into the system will cover site-specific connection costs plus location sensitive costs that reflect the transmission benefits or burdens associated with their location. Location-based rates should encourage the efficient location of new plants on the grid.

### *Electric Transmission Council*

The Electric Transmission Council is made up of distributors, generators, independent power producers, consumer groups and rural electrification associations, as well as representatives from the transmission owners. It is responsible for reviewing the activities of the Transmission Administrator and advising on issues related to the grid.

Some specific areas where it will provide advice and recommendations include:

- Proposed modifications or additions to the transmission system.
- Planning for the future of the grid.
- Any aspect of operations, including tariffs.

The Council has an independent staff to assist its members in their role.

## 4.2 System access and tariffs

Transmission costs continue to be regulated. The Transmission Administrator submits a tariff schedule to the Alberta Energy and Utilities Board for approval.

Several key principles underlie system access rates:

- *Postage-stamp rates to distributors* — This ensures all customers face a system access tariff that is independent of where they are located in the province.
- *Location-based rates for generators* — The structure of the rate paid by generators for access to the system encourages them to locate where they will minimize transmission costs for the system as a whole.
- *Costs include system support services* — A transmission system depends not only on power lines and transformers to deliver power. It must deliver power at stable voltages, and requires such support services as "spinning reserve" and automatic generation control to maintain the system within narrow tolerances as load rises and falls. A transmission system also loses a certain amount of power in delivery across long distances. The costs of such items are included in the costs recovered through system access rates.
- *Import and export rates* — Importers and exporters pay a fixed system access fee for all contracts to offset the costs of administering them. A "transmission transfer charge" ($/MWh) is posted daily by the Transmission Administrator for service on the following day. The minimum transfer charge is $2/MWh, but is otherwise based on available market indices and should vary to reflect demand for transmission capacity.

[7] Alberta Power, City of Calgary Electric System, Edmonton Power and TransAlta Utilities.

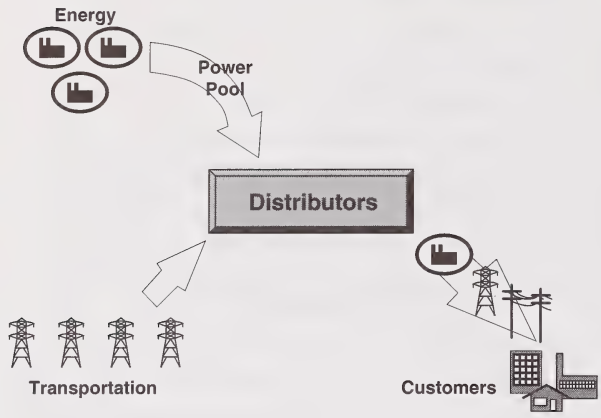



**Figure 5. Distribution under the new structure**

*Customers buy electricity from their distributor as a package, including production, bulk delivery, local delivery and retail services. Distributors provide local delivery and retail services and buy the other two components of power — production and delivery — separately through the power pool and from the Transmission Administrator.*

## 5. Distribution

In Alberta's new industry structure, distributors continue to have essentially the same relationship with their customers as before. Service area boundaries are unaffected by the Act.

However, behind the scenes, distributors play a different role than in the former, vertically integrated system. They put the components of delivering power together in a different way. (See Figure 5.)

### 5.1 Entitlement to existing generation

The six largest distribution systems in the province[8] are each obligated to pay a share of the fixed costs of Alberta's existing generating units. In return, they are entitled to a legislated financial hedge of the energy produced by those units. The hedge is related to the regulated operating costs of the units — if pool price is higher than the regulated cost, distributors pay the lower, regulated cost for energy.

These distribution utilities have a number of responsibilities (and risks) that stem from their legislated hedges:

- They must arrange with the Transmission Administrator for system access services.
- They must settle with the power pool for all energy taken.
- As load grows and the legislated hedges come to cover less of their needs, they must be prepared either to remain unhedged, purchasing the difference at the pool price, or to enter into new price hedging arrangements with suppliers.

#### *Other distribution agents*

Besides the six "entitled" distribution utilities, there are a number of other distributors in the province. These include smaller municipalities that own their own distribution systems and rural electrification associations (REAs). All the municipalities buy their energy and system access services from TransAlta. The REAs have contracts either with TransAlta or Alberta Power.

These distributors buy energy from entitled utilities, and the costs they pay reflect their share of overall load in the province. Essentially, their share of the hedges is built into TransAlta's or Alberta Power's entitlement.

These distributors have the option of participating directly in the power pool and making their own arrangements for future capacity if they wish to do so. In this case, the costs (both fixed and variable) related to their share of existing generation would be transferred from Alberta Power or TransAlta to the smaller system, which would then take on all the risks and responsibilities associated with the entitlement.

## 6. Cost regulation

While competition will control the cost of new generation, regulation is still needed in many areas of the electric

[8] Alberta Power, Edmonton Power, City of Calgary, City of Lethbridge, City of Red Deer, and TransAlta Utilities.

industry. Existing generating units continue to be regulated to ensure that customers retain the benefits of their low cost. The operation of the transmission system will be monitored to ensure that no conflict of interest occurs among generators, distributors and transmission owners who are linked corporately. Distribution costs and the allocation of those costs across customer classes will be reviewed.

Regulation continues to protect consumers in all areas of the industry.

## 6.1 Alberta Energy and Utilities Board

The Alberta Energy and Utilities Board is responsible for examining and approving the following:

- The cost of existing generation owned by Alberta Power, TransAlta Utilities and Edmonton Power, until such time as a negotiated agreement is reached to replace a unit's legislated financial hedge or a unit is removed from regulation under terms to be set by regulators under the Act.
- Replacement of the legislated financial hedges with negotiated hedges.
- System access tariffs submitted by the Transmission Administrator, based on the costs submitted to the administrator by transmission owners.
- The costs incurred by investor-owned distribution companies, along with the retail rates they charge to customers. The distribution costs and rates for municipally owned utilities are regulated by their respective municipalities rather than the Board.
- Any new, long-term financial arrangements that distributors enter into with generators to hedge the pool price.

The EUB will continue to review applications to build generating plants for compliance with environmental and siting requirements.

## 6.2 Incentive regulation

Regulation of Alberta's electric utilities, as in most other jurisdictions, has been based on the traditional "cost of service" approach. With this approach, regulators review all areas of a utility's expenditures and determine whether the costs have been prudently incurred and can be charged back to customers. As part of the exercise, the regulator determines a reasonable rate of return on the investment in facilities; this is what constitutes a utility's earnings.

Incentive regulation — also known as "performance-based" regulation — aims to reduce costs by giving utilities stronger incentives to pursue efficiencies. Traditional cost of service regulation does not reward exploration of new or different ways to increase efficiency. The key to incentive regulation is to allow utilities to keep part of any profits gained from innovative cost reductions. This increases their incentive to search for ways to cut costs.

There are several ways to implement incentive regulation. Approaches that are being tried in other parts of North America include:

- Setting measures that reward generating units for meeting certain performance targets.
- Increasing the period over which rates are approved, which gives utilities a stronger

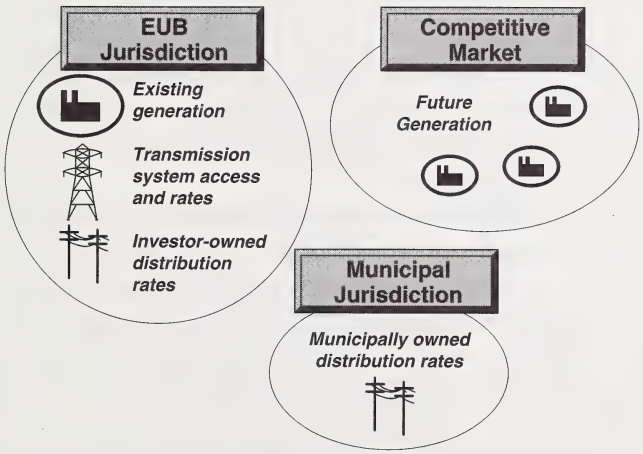



**Figure 6. Regulation in Alberta's electric industry**

*The Alberta Energy and Utilities Board will continue to regulate the costs of existing utility generation, the transmission system, and investor-owned distribution systems. Future generation costs will not be subject to the Board's approval, although it will review the prudence of new, long-term contracts that distributors make to hedge the pool price. Municipalities will continue to approve costs and rates for the distribution systems they own.*

incentive to forecast their costs accurately, and to meet or exceed performance forecasts.

- Setting price caps that keep consumer rates below certain targets.

The Electric Utilities Act removes legislative barriers that previously limited provincial regulators from adopting incentive regulation. The Alberta Energy and Utilities Board is now empowered to approve a package of incentives that best suits Alberta's particular needs.

## 7. Looking ahead

The implementation of the Electric Utilities Act on January 1, 1996, represents a milestone in the development of Alberta's electric industry — but certainly not an end point. In the months and years ahead, Alberta's electric industry will continue to evolve towards a fully competitive generation market.

This evolution will continue to take place through consultation with stakeholder groups. The consultation process has proved effective in bringing about the changes to date and it clearly seems the right way to keep moving forward.

The Electric Utilities Act established the Advisory Committee to advise the Minister of Energy on regulations and future development of the industry. Now that basic structures such as the power pool are in place, the stakeholders can move on to other issues. Some of the priority items include:

- *Replacing the legislated obligations and entitlements for existing generation with commercial arrangements.* This will help move the generation sector to a fully competitive market. It will replace the regulated sharing of costs for existing generation with commercial or negotiated arrangements that still retain the value of its low cost for all customers in the province.
- *Studying customers' pricing options.* The Advisory Committee is examining a range of options for end-user choice of pricing arrangements. At one end of the scale, distributors would continue to arrange hedges on behalf of all their customers; at the other end all customers would be allowed to make their own arrangements directly with suppliers, if they wished.

  Since the study is based on the premise that all customers would continue to pay their share of the costs of *existing* generation, the options would only cover load in excess of the amount covered by the legislated hedges.
- *Developing an appropriate package of incentive regulation.* The Act allows utilities and consumers to negotiate a package of incentive regulation to present to the EUB for approval. A significant amount of all participants' time and money could be saved by negotiating settlements prior to Board hearings. The Board will ensure that any negotiated package will suit Alberta's needs, now and in the future.

The legislative changes that came into effect on January 1, 1996, have started to move Alberta's electric industry on a path that will change its fundamental structure. Through consultation with stakeholders, drawing on their expertise and on the experience of other jurisdictions, the province is moving to a robust, fair and open market for electric energy.

This path:

- Ensures that consumers throughout the province continue to share fairly in the advantages of the low cost associated with existing generation and in the costs of providing system access;
- Holds down electricity rates through increased competition in the future among generators, lower regulatory costs and better incentives for utilities to pursue innovative cost reductions;
- Holds distributors more clearly accountable, in the longer term, for the costs of new generation in their rates.

These changes will benefit consumers, maintain the competitiveness of Alberta's industries, and maximize the Alberta Advantage of low electricity prices.

## 8. Where to find additional information

This guide is intended as a general, non-technical reference to Alberta's new industry structure. It is not an official interpretation of the Electric Utilities Act and associated regulations.

### *For more information*

- Copies of the Electric Utilities Act

  *Contact:* Queen's Printer Bookstore
  11510 Kingsway
  Edmonton, Alberta T5G 2Y5
  Tel: (403) 427-4952
  Fax: (403) 452-0668

  Queen's Printer Bookstore
  Main Floor, McDougall Centre
  455 – 6th Street
  Calgary, Alberta T2P 4E8
  Tel: (403) 297-6251
  Fax: (403) 297-8450

- Information regarding the Electric Utilities Act and associated regulations

  *Contact:* Larry Charach
  Senior Director,
  Electricity Policy Branch,
  Alberta Department of Energy
  5th Floor, North Petroleum Plaza
  9945 – 108 Street
  Edmonton, Alberta T5K 2G6
  Tel: (403) 427-8177
  Fax: (403) 427-8065

- Information about the Power Pool of Alberta, copies of the *Power Pool Rules*, or on how to access the Power Pool electronic bulletin board

  *Contact:* Lorry Wilson
  Power Pool Administrator
  Power Pool of Alberta
  1110 1st Street S.W.
  Calgary, Alberta T2P 0V1
  Tel: (403) 543-0380
  Fax: (403) 543-0388

- Information about the Transmission Administrator and the Electric Transmission Council

  *Contact:* Ed Rarog, P. Eng.
  Executive Director
  Electric Transmission Council
  Executive Centre
  Manulife Place
  #1150, 10180 – 101 Street
  Edmonton, Alberta T5J 3S4
  Tel: (403) 423-4306
  Fax: (403) 423-4311

- Information about The Grid Company of Alberta

  *Contact:* W. James Beckett, P. Eng.
  President
  Grid Company of Alberta Inc.
  12th Floor, 10035 – 105 Street
  Edmonton, Alberta T5J 2V6
  Tel: (403) 420-7618
  Fax: (403) 420-5410

### *Other publications*

*Enhancing The Alberta Advantage: A Comprehensive Approach to the Electric Utility Industry*, Electricity Policy Branch, Alberta Department of Energy, October 1994.

*Contact:* Kathi Day
Electricity Policy Branch
Alberta Department of Energy
5th Floor, North Petroleum Plaza
9945 – 108 Street
Edmonton, Alberta T5K 2G6
Tel: (403) 427-8177
Fax: (403) 427-8065

*A Guide to Importing and Exporting Energy from the Province of Alberta*, Grid Company of Alberta Inc., December 1995.

*Contact:* Grid Company of Alberta
(see address above)

*Grid Company of Alberta 1996 Interim Electric Tariffs*, Order E95124, Alberta Energy and Utilities Board, December 21, 1995.

*Contact:* Alberta Energy and Utilities Board
Information Services
640 – 5th Avenue S.W.
Calgary, Alberta T2P 3G4
Tel: (403) 297-8190
Fax: (403) 297-7040

# Appendix A. Structure of the Legislated Hedges

## A.1 Reservation Payments

The legislated hedges are set through a combination of regulations and EUB decisions. The owners of existing regulated generating units — Alberta Power, Edmonton Power, and TransAlta Utilities — recover their fixed generation costs through "reservation payments" which are set by the EUB for each unit.

These payments come from the distribution utilities and the Transmission Administrator based on shares which are set in regulations. (See Figure 7.) The shares vary over the period 1996 to 1999 and are fixed thereafter at the 1999 levels. The criterion for setting the shares was to allow a smooth transition from the old industry structure to the new. No significant changes in the distributors' costs should translate into no significant changes in retail rates during the transition period.

The Power Pool Administrator carries out the financial settlement of the reservation payments each month.

## A.2 Obligations and Entitlements

In return for having their fixed costs covered, the regulated generators are obligated to provide a hedge of the hourly pool price to distributors. The mechanism of the hedge does not tie particular generators with particular distributors. Instead, generators' hedge payments in an hour are *pooled.* Distributors and the Transmission Administrator then split the pooled hedge payments on the basis of pre-determined shares set in regulations.

The amount paid by a generator (its "obligation") is determined in part by the generating capacity and variable running costs of its regulated generating units and in part by the hourly pool price. The exact amount varies from hour to hour, and is calculated as follows:

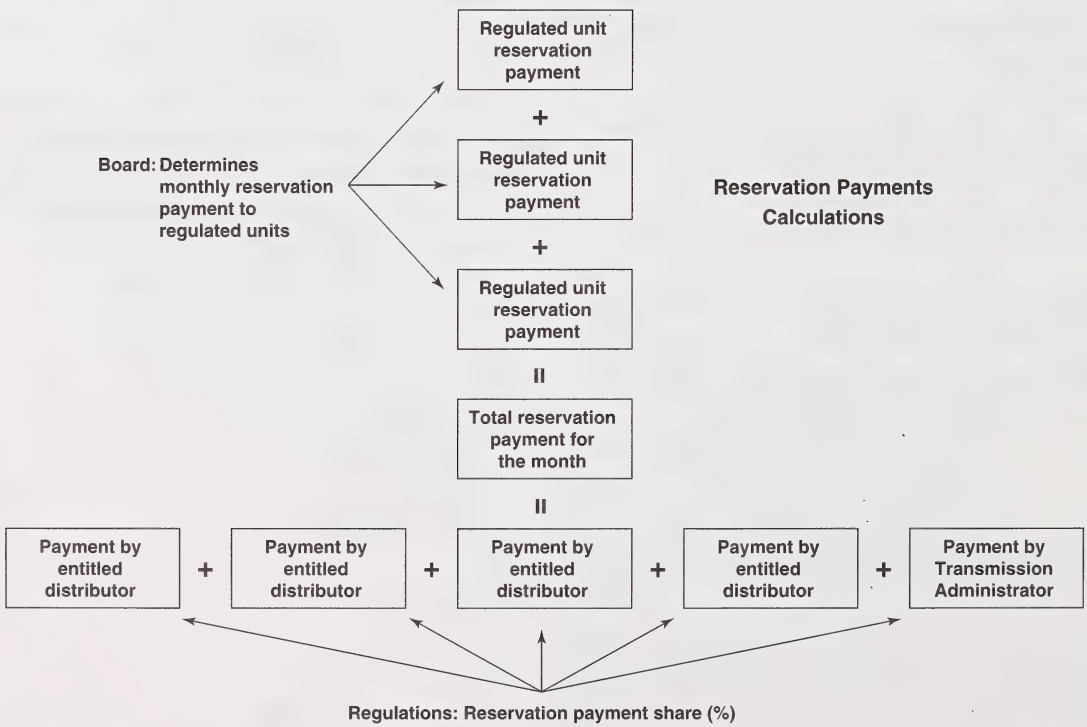



**Figure 7. Covering the Fixed Costs of Existing Regulated Generating Units**

- Regulations specify a "unit obligation amount" (UOA) in MW for each unit in each hour of the year. The criterion used to set the UOA was that it create a financially sensible hedge for the generator.[9]
- The EUB determines a "unit obligation price" (UOP) for each unit. The UOP is equal to the expected (forecast) variable cost of the unit, and includes both incremental running costs and non-incremental startup costs.
- A unit's obligation is triggered by the pool price:
  a) If the declared pool price in the hour is greater than the regulated unit's UOP for that hour, the "unit obligation value" (UOV) for the unit is:

$$UOV = (\text{Pool Price} - UOP) \times UOA.$$

  b) If the declared pool price in the hour is less than or equal to the regulated unit's UOP for that hour, the unit obligation value for the unit is:

$$UOV = 0.$$

In each hour, the individual unit obligation values are summed and then allocated among the distributors and the Transmission Administrator.

The share of money received by a distributor for an hour (its "entitlement share") is based on a forecast of its load share in that hour. The Transmission Administrator's entitlement share is based on the forecast hourly line losses in the system. Entitlement shares are specified for each hour of the year from 1996 to 1999 in regulations. Shares from the year 2000 on are fixed at the 1999 levels.

The structure of the obligations and entitlements is illustrated in Figure 8. The Power Pool Administrator is responsible for the financial settlement of these hedges.

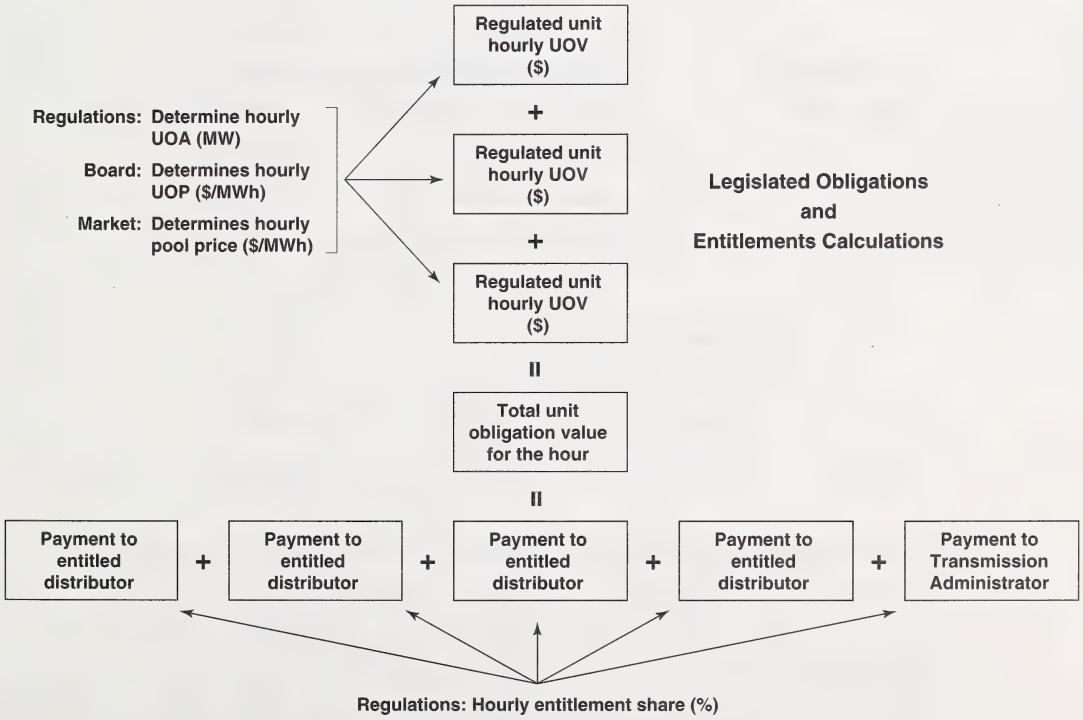



**Figure 8. Sharing the Benefits of Low-cost Existing Generation**

[9] "Financially sensible" was defined as the output level for which the forecast revenues made on sales above the UOA exactly offset the forecast cost of the obligation when the unit was unavailable, either through planned maintenance or forced outage. The forecasts assumed that the surplus load-carrying capability of the system was zero. This definition resulted in setting the unit obligation amount slightly below the average availability of the unit.

Note that the hedge is not contingent on either actual generation by a regulated unit or the actual hourly load of a distributor. Regulated generators are required to pay their obligations whether they run their units or not; distributors and the Transmission Administrator receive a fixed entitlement share based on their forecast load, not their actual load.

This set up creates good incentives for the Transmission Administrator and the regulated generators. The Transmission Administrator has an incentive to make planning and operating decisions which minimize line losses. Generators have an incentive to meet or exceed forecast unit availabilities. They may find it cost-effective to reduce forced outage rates and/or reduce the time their units are down for planned maintenance.

## A.3 Effect of the Legislated Hedge on Net Cost of Power

In the early years, the net cost of purchased power to distributors is expected to be greater than the average pool price. As shown in Figure 9, the net cost has three components: the pool price, the reservation price, and the obligation values. As long as the reservation price component outweighs the obligation value component, the legislated hedges imply a net cash flow from distributors to generators.

At some point, as the average pool price rises and the reservation payments fall, this situation will reverse. The net cost of power from the legislated hedges will be less than the pool price and net payments will flow from the regulated generators to the distributors.

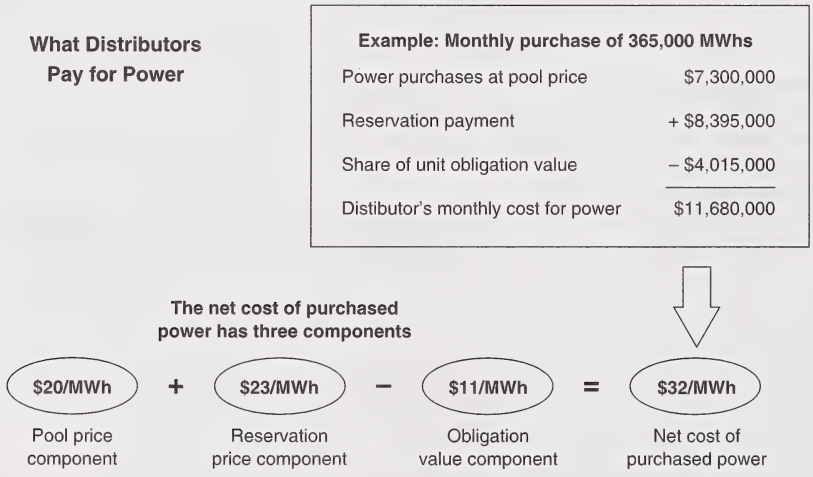



**Figure 9. Determining the Net Cost of Power under the Legislated Hedges**

*Breaking the net cost down into its 3 components — pool price, reservation price, and obligation value — illustrates how the net cost of power to distributors is determined. In the example shown above, a distributor has purchased 365,000 MWhs at the hourly declared pool prices over the month. This resulted in pool payments of $7.3 million. It also paid out about $8.4 million for its share of the reservation payments to regulated generators, and received about $4 million from its share of the unit obligation value. Overall, this means that the distributor's net cost for the power was $11.68 million, or $32/MWh on average.*

*(Note: the numbers used in this example are for illustration only.)*

# Appendix B. Industry Restructuring Participants

Alberta Association of Municipal Districts and Counties

Alberta Department of Energy

Alberta Energy and Utilities Board

Alberta Federation of Rural Electric Associations

Alberta Irrigation Projects Association

Alberta Power Limited

City of Calgary

City of Lethbridge

City of Medicine Hat

City of Red Deer

Consumers Association of Canada (Alberta Chapter)

Edmonton Power

Environmental Law Centre

Independent Power Producers Society of Alberta

Industrial Power Consumers Association of Alberta

Mayor's Committee on Industry Restructuring

Northern Alberta Development Council

Public Institutional Consumers of Alberta

TransAlta Utilities Corporation

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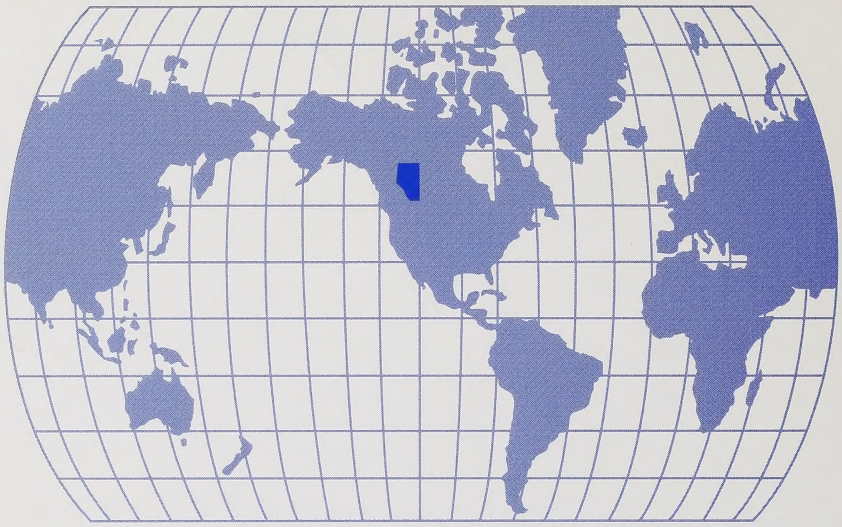

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